Bugs, Updates, and Limitations

Bugs

Bugs in Version 1.0: A rarely encountered bug was discovered that sometimes caused an EzGet internal table (where dimension information is stored) to fill up prematurely. This bug would be obvious to any user who encountered it and was corrected in version 1.1.2. Another bug was found which affects masking of geographical regions. If a geography mask were stored with more than the longitude and latitude dimensions explicitly defined (e.g., if the mask were a function of time), but if in fact this third dimension contained only one element (i.e., "time" might actually only be a dummy dimension and therefore the data stored would only be 2−dimensional), and if the field that EzGet was instructed to mask was in fact a function of time, then EzGet will obtain masking information for most of the field from some unpredictable location in the computer's memory and garbage will be produced, which may or may not be evident to the user. This bug was corrected in Version 1.1.3. A bug that affects mapping data to a target grid when the domain for the longitude dimension requires use of the "cycle" length information (usually 360 degrees) prevents proper regridding in some cases. This bug was fixed in Version 1.1.4.

Bugs in Version 1.1: Several bugs were found having primarily to do with masking geographical regions under the newly implemented option to use land fraction data (expressed as a percentage). The worst problem found was that land data would be masked when ocean data should have been masked and vice versa. Most of these bugs were corrected in Version 1.1.2. Also the second bug found in Version 1.0 remained in Version 1.1, but was corrected in Version 1.1.3, and the third bug found in Version 1.0 remained in Version 1.1, but was corrected in Version 1.1.4.

Bugs in Version 1.1.2: Two bugs related to the newly implemented option to use land fraction data (expressed as a percentage) were discovered. Also the second bug found in Version 1.0 remained in Version 1.1.2. These bug were corrected in Version 1.1.3. The third bug found in Version 1.0 remained in Version 1.1.2, but was corrected in Version 1.1.4.

Bugs in Version 1.1.3: The third bug found in Version 1.0 remained in Version 1.1.3, but was corrected in Version 1.1.4. A bug (introduced into Version 1.1.3) that affects geography masking in the case that the land fraction data are stored as INTEGERS (0 to 100) leads to incorrect masking results. All known PCMDI land fraction data masks are stored as real (0.0 to 100.0), not integer, so this bug should not have had any affect on data processed at PCMDI. This error was also corrected in Version 1.1.4.

Bugs in Version 1.1.4: Minor bugs in the selection of geographical regions were found; these bugs should be obvious if encountered because the code crashes. A bug in the regridding option that allows mapping to a user−specified gaussian grid was found. An error in overriding cycle=0. when regridding was found. A few other errors were found, but documentation is unavailable.

Bugs in Version 1.2: No bugs have been reported in the most recent release of EzGet (Version 1.2; 11 February 2000). Users should report suspected bugs to taylor13@llnl.gov. Also all users should register by email at taylor13@llnl.gov, indicating name, location, and platform, so that they can be immediately informed if significant bugs are found. New releases of EzGet will be announced by email to all those registered.

Updates

A short description of the differences in various versions of EzGet is given here. Version 1.0 was the original version of EzGet to be publicly released in March 1996. It had been thoroughly tested at PCMDI over a two year period. Version 1.1 was released in September 1996. Programs using version 1.0 should run successfully under version 1.1, but the newer version differs in the following respects:

- The capability for selecting (or masking) data from specific geographical regions was extended so that output from the Atmospheric Model Intercomparison Project 2 (AMIP 2) and Paleoclimate Modeling Intercomparison Project (PMIP) could be used in unmodified form. In addition to the types of geographical data that were previously permitted, version 1.1 makes it possible for EzGet to read land fraction data (expressed as a percent) or sea ice fraction data (expressed as a percent), making it easy to mask out data from land, ocean or sea ice regions in analyses of the intercomparison project output. In addition, when data is extracted, for example, from land areas only, the weights created by EzGet, which can be used to calculate area averages, are properly generated even for models in which individual grid cells are partly land and partly ocean. See documentation of subroutines defgeog, getgeog, and defmisc for further details.

- The capability of extracting integer data was expanded by allowing for proper identification of missing integer data. See documentation of subroutine defmisc for further details.

- A bug in the assignment of aliases for the longitude and latitude coordinates (accomplished through calls to subroutine defmisc) was corrected. See documentation of subroutine defmisc for further information.

- The assignment of weights for the LMCE and LMD models was corrected and generalized to allow for different model resolutions.

- In calls to subroutine defdim, EzGet now recognizes that the model acronym 'ech*' (where * can represent any group of characters) indicates a gaussian grid. See appendix A of the documentation.

- A bug was found and corrected, so that EzGet now correctly recognizes the equivalence of the strings, 'sea ice', 'sea−ice', and 'seaice', which are used to select data from regions with sea ice. If this bug was encountered in the previous version, an explicit error message would be written so the user would have known about it.

- Documentation was updated to account for all these changes. Significant changes were made in the sections on subroutines defgeog, demisc, and getgeog.

Version 1.1.2 was released in 11 November 1996. It differs from Version 1.1 in the following respects:

- A few bugs were corrected, primarily having to do with masking geographical regions under the newest option to use land fraction data (expressed as a percentage). The worst bug was that in version 1.1 land data would be masked when ocean data should have been masked and vice versa. Also an option is now available to specify explicitly that the geography data set contains land fraction data (expressed as a percentage). See documentation of subroutine defmisc for further details.

- A bug involving an internal dimension table created by EzGet was corrected, which makes it less likely that this table will become filled.

Version 1.1.3 was released on 19 December 1996. It differs from Version 1.1.2 in the following respects:

- The two bugs described at the beginning of this page were eliminated.

Version 1.1.4 was released on 16 May 1997. It differs from Version 1.1.3 in the following respects:

- A bug in all previous versions that prevented proper mapping of data to a target grid when the

longitude domain required information on the "cycle" length (usually 360 degrees) was corrected. Another bug was fixed which now allows the user to reset the geography masking "off" by specifying "0 " as the mask−index in a call to defgeog (as described in the documentation). This error was present in all previous versions. In addition the specification of the parameter, 'data size', by a call to subroutine defmisc, which was inadvertantly required by previous versions in order to correctly retrieve data through subroutine getvdata, is no longer required, but continues to be recommended. A bug in Version 1.1.3, which affected land/sea masking when land fraction data was stored as integers (0 to 100), was corrected.

- A new subroutine was added to EzGet: subroutine getnogap, which allows the user to extract data and place it in contiguous memory. This subroutine is nearly the same as subroutine getvdata, but the user can instruct EzGet (through one of the subroutine arguments) to check that the data extracted will not exceed the size of the arrays the user has defined to receive the data. Thus instead of defining 'data size' by calling defmisc followed by a call to getvdata, the user can more concisely simply call getnogap. This subroutine is described in the latest documentation.

- The maximum length allowed for variable names was increased from 16 to 64 characters.

- A change was made in the behavior of EzGet in the case of a dimension that is length 1. For example, consider a file containing a variable that is a function of longitude, latitude and time, but all data in the file are from a single time "slice". In this case (in which a dimension is defined in a file, but has a length of one) EzGet no longer requires the user to call subroutine defdim for this dimension. If the dimension is not defined by the user, EzGet will assume the user wants to retrieve the single time "slice" of data from the file and will apply unit "weighting" for this dimension.

- In the EzGet documentation, all references to subroutine getvdata were removed because this subroutine is nearly identical to subroutine getnogap, which is now fully documented. The documentation was also revised to be consistent with all software changes made since Version 1.1.2.

Version 1.2 was released on 11 February 2000. It differs from Version 1.1.4 in the following respects:

- Bugs were fixed as described above.

- A capability was added to calls to subroutines defvar and defvarex, which allows the user to check that a file exists before attempting to retrieve data. When this option is invoked, an error flag is returned to the user indicating whether or not the variable was found. In previous ezget versions, the code would error exit if a variable or file did not exist. The latest EzGet documentation explains this feature.

- A subroutine was added (diminfo) which returns descriptive information about a dimension (e.g., units, title, source, etc.). The latest EzGet documentation explains this feature.

Limitations

Current limitations of EzGet include:

- EzGet has not been ported to the DEC Alpha computers.

- The full capabilities of EzGet apply only to 4−byte floating point (real*4) data. Double precision and integer data, for example, can be extracted, but cannot be interpolated to new grids within EzGet. Missing data values can be recognized for integer data, but not double precision data.

- The names of fields that will be extracted by EzGet should be no longer than 64 characters long. All standard names for AMIP and PMIP are well within this limit.

- Coordinates are converted to single precision when extracted by EzGet, and currently it is only possible to specify the domain of data to be extracted in single precision. This may lead to problems if, for example, the time domain of some hourly data you want to extract is for years 1000 through 1001 (i.e. hours 8,760,000 through 8,768,760). Single precision floating point numbers are unable to resolve 1 part in 8.7x10**6, so it would not be possible to properly extract this data by specifying a domain with subroutine defdim. Note, however, subroutine defdimi could be used to specify a domain and retrieve the data successfully (but if it were necessary to retrieve the coordinate values by calling getcoord, they would be truncated.)

- Geography maps used to specify regions such as "North America", "Australia", "South Pacific", etc. are currently available for AMIP 1 models, but they are not yet available for all PMIP, CMIP, or AMIP 2 models.